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ORIGINAL RESEARCH

Replicating an Educational OSCE Project for Skill Assessment of Junior Anesthesiology Residents at Multiple Institutions: A Qualitative Description

ANNETTE REBEL, MD
AMY DILORENZO, MA
ROB ISAAK, DO
STUART MCGRANE, MB, CHB

KENNETH R. MORAN, MD
EDWARD C. MOBLEY, MD
DEMICHA D. RANKIN, MD
MARJORIE STIEGLER, MD

ARNA BANERJEE, MBBS
ROBERT M. CRAFT, MD
RANDALL M. SCHELL, MD, MACM

INTRODUCTION

Educational projects are frequently developed and implemented by individual institutions, and successful projects are commonly published and presented at national meetings. However, the question frequently arises whether the approach and results are generalizable and able to be successfully replicated in other settings.^{1,2} The same question can be asked about Objective Structured Clinical Examination (OSCE) interventions that programs are developing for both formative and summative assessment purposes. Other surgical specialties have shown that objective structured assessment of skills has enhanced the educational value of their training process, but implementation has been a time-consuming and labor-intensive process.³ An OSCE event was developed at the University of Kentucky in 2011 and conducted annually to provide educational benefits for anesthesiology resident learners.^{4,5} While many anesthesiology residency programs are focusing their OSCE development and implementation on senior residents to help prepare them for the new APPLIED examination portion of the primary board certification process, the University of Kentucky has been using an OSCE to assess skill growth and progression for learners of all levels. OSCEs can be very helpful in assessing resident skill growth and facilitating self-reflection over the course of residency training.⁶

We hypothesize that a successful OSCE

event for junior anesthesia residents can be replicated at other programs. The aim of this study was to investigate the process of replicating an effective educational OSCE event at other institutions. In addition to studying the replication process at other institutions, the purpose of this study was also to identify barriers to successful replication related to faculty training, OSCE information, scripts for training of standardized personnel, and/or educational value.

METHODS

OSCE Event

A multi-station OSCE event was initially developed at the primary institution and has been conducted annually since 2011.⁴ Since 2013, after undergoing a 2-year iterative revision process, the OSCE scenarios and assessment tools have remained consistent (Table 1). A thorough description of the event has previously been published.⁴ Since the event was designed for entry-level residents (CA0 or CA1), the educational focus was placed on assessment of resident participants' skill in performing basic anesthesia tasks. Resident participation has been incentivized by recognition of high-performers with medals and gift cards.

Replication of the Educational OSCE Project

The secondary site selections were based on geographic distance from the primary site to facilitate in-person collaboration. Potential sites were contacted by an initial

recruitment email followed by an in-depth telephone conversation to explore interest and provide details regarding delivery of the event at their institution. Each participating anesthesiology residency program had to be able to provide (1) access to an adequate simulation space to conduct the event, (2) access to standardized persons, simulation personnel, and equipment for the stations, and (3) sufficient faculty to staff the stations. After a verbal agreement of participation, the primary investigators (AR/AD) made an initial visit to each site in 2016 to assess the location logistics and educational environment, including availability of faculty, participants, space, and equipment. Each site appointed a local site event director (SED) at their institution, and this individual received detailed information about the event. Each institution selected an optimal time period for their program to conduct the event and organized the event schedule, faculty presence, simulation space, and necessary equipment. After Institutional Review Board [IRB] approval was obtained at each site, the participating residents provided written consent to participate in the research collaboration. The residents were informed that they would receive formative verbal feedback after each OSCE performance, but that the OSCE results would not be part of a formal performance evaluation by their program.

The primary institution provided the OSCE

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scenarios, assessment tools, rater training, and resident participant instructions. Both the rater training and resident participant instructions were provided as computer-based slide presentations. The pre-event instructions sent to the participating institutions included information about workstation content, assessment tools, and assessment process, including OSCE demonstrations and examples. Two faculty from the primary institution assisted the secondary institutions during developmental stages and were present at the secondary institutions during each event for consultation.

The top performers for each workstation were selected based on faculty assessment scores and were awarded gift cards in an informal group meeting at the conclusion of the event. The rewards for the participants (gift cards \$10 to \$25) were provided by the primary institution, with the exception of 1 institution that provided their own incentives.

Event Assessment

The primary institution sent confidential electronic feedback surveys to the participating residents and faculty at each institution. A pre-event survey was sent to the participants 1 week before the event, while the post-event survey was delivered after the debriefing meeting, conducted by the SED. The pre-event survey explored the participants' self-assessment regarding their own skill level with performing basic anesthesia tasks. The post-event survey contained 2 parts: Part A was identical to the pre-event survey; Part B had questions related to the participants' perception of the event difficulty and educational value.

Using a semi-structured interview questionnaire, the primary site investigator (AR) conducted an interview of each participating program director (PD) and SED immediately following the event. The interviewer asked questions about OSCE background experiences at each program, event logistics and limitations, perception of event validity, perception of the educational value of the OSCE event, and possible future applications of the OSCE event (Figure 1). The interview was voice-recorded and transcribed for qualitative data analysis. All OSCE station directors at each site received

a post-event electronic questionnaire to provide feedback to the primary institution.

Resident Assessment

Each OSCE station encounter was scored during the event by on-site faculty raters. Standardized rater training was provided prior to the event using a computer-based slide presentation with instructions including an overview of all assessment tools used for the OSCE stations. Most encounters were video-recorded at the local institution if technology resources were available. Although resident performance in the project was not utilized for formal summative evaluation, each program could use the video recording for formative feedback if training gaps were identified, and to allow for learner's self-reflection upon performance, identifying individual strength or weakness as the basis for development of individualized learning plans.

Analysis

Voice recordings of the post-event interviews with SED and PD were transcribed. Using qualitative research methods, we adapted a thematic analysis for the examination of the interviews, identifying and describing data and patterns of the programs' perception of OSCEs in general and this OSCE event in particular.⁷ The analysis was conducted after all events were completed. Transcripts were read several times by 2 of the primary investigators and coded using short word phrases. After the initial coding and recoding, we identified themes and sub-themes.

All surveys were sent electronically (www.qualtrics.com, Washington DC). Response information was kept confidential. The survey was managed by an independent facilitator. SEDs, PDs and primary investigators were unaware of each other's individual responses or the response rate. Only de-identified survey data were available for analysis.

RESULTS

In addition to the primary institution, 4 anesthesiology residency programs participated (n=5 institutions). The participant cohort size varied from 8 to 16 residents (CA0 or CA1). Each program chose the training level of the participating resident group. A total of 60 residents participated: 36 CA0 from 3 institutions, 24 CA1 res-

idents from 2 institutions (Table 2). As a cohort, participants had less than 4 months of anesthesiology experience in residency.

Event

The duration of this 1-day event varied from 4 to 8 hours depending on the number of resident participants. Most sites conducted all workstations (WSs) independently. One program combined WS 4 (general anesthesia induction) with WS 6 (intraoperative crisis management) because of staff constraints. The SED determined that the content of these 2 stations would supplement each other and were therefore appropriate to combine. However, the scenario content of WS 4 was separated from WS 6 by a 2-minute break, and the WS performances were evaluated separately.

Assessment

<3>1. Participant Perception

Out of 60 participants, 50 residents completed the pre-event survey (overall response rate 83%, participating institution range 73% to 93%). Confidence was defined as a response 'strongly agree' or 'agree' to each statement (Figure 2). More than 50% of respondents were confident in their skills to perform a preoperative evaluation OR ventilator check out, airway management, peripheral IV placement, transfer of care in the Post Anesthesia Care Unit, and general anesthesia induction sequence. A lower percentage of respondents (43%) felt confident in managing intraoperative hypoxemia.

Out of 60 participants, 39 residents completed the post-event survey (overall response rate 65%, range 36% to 100%). Compared to the pre-event survey respondents (Part A of the post-event survey), the post-event survey indicated an increase in perceived skill competence in performing a preoperative evaluation, transferring care in the Postanesthesia Care Unit [PACU], and performing an anesthesia induction sequence. Survey respondents confirmed potential skill gaps in machine checkout, IV placement, and intraoperative hypoxemia management (Figure 2).

Part B of the post-event survey indicated that participants perceived learning value in the event (Figure 3). A high percentage of responders indicated that (1) the

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event was helpful in identifying personal strengths and weaknesses, (2) the immediate feedback after the performance was beneficial, (3) the OSCE event was an overall outstanding learning experience, and (4) they would recommend this event to other learners. The participants did not universally agree with the value of the competitive event structure. While more than 60% respondents indicated they enjoyed the competitive structure of the OSCE event, less than 45% agreed that the competitive aspect facilitated their performance.

<3>2. Program Perception

Based on the post-event interview of the SED and PD, we identified several major themes (Table 3):

<4>Background:

Three participating programs had not yet integrated OSCE as a systematic educational assessment method into their training program but were planning to in the future. Simulation training is currently offered to the residents at a more advanced training level. Only 1 program is conducting OSCE events for semi-annual milestone assessment and preparation for board certification. However, the residents from this institution had not been involved in the local OSCE events prior to this event.

<4>Feasibility

The SEDs found that access to junior residents was easily achievable with adequate advanced planning. Some programs brought in additional clinical anesthesia providers to facilitate release of the resident and faculty participants from clinical duties. All programs perceived that conducting such an event with more advanced residents would be more difficult because of the potential scheduling conflict with clinical obligations. The cooperation from the department and availability of institutional resources are seen as very important factors for conducting such an educational event. The most difficult part of this event was to provide adequate numbers of faculty facilitators and raters for each WS.

<4>Event Content

The SEDs and PDs agreed that the OSCE event content was appropriate for the participants at their sites. They also agreed that

the obtained information could be useful for milestone assessment during residency and that the OSCE approach would be particularly helpful for several milestones that are difficult to assess in routine clinical practice. The OSCE event was helpful in identifying skill deficiencies in technical and professional/communication skills. One PD commented on the advantage of the OSCE in, "observing without bias what the actual skill level of a resident is." The PD thought that "this assessment would be more believable than faculty feedback from clinical observation." The SEDs and PDs agreed that this event could be used as a component of preparation for the ABA primary certification process. The event content could be easily modified to cover more advanced skills.

One PD commented on the need for skill growth assessment data. Obtaining sufficient feedback regarding the skill level and growth in skills of junior residents, who may not spend significant time on anesthesiology rotations or regularly be with the same faculty member, is perceived as difficult. This OSCE event may address this void by obtaining milestone data for junior residents. This baseline assessment data might then be compared to data from similar events when the resident is at a more advanced level of training to document longitudinal skill growth assessment.

<4>Perception of the Competitive Aspect

The SEDs and PDs believed the competitive aspect did not interfere with the resident performance. Some stated that the competitive aspect motivated the participants and that "competition motivated residents' investment in 'doing well.'" The SEDs indicated that the participants perceived that the object was not to compete against each other but to do their personal best. The competitive aspect was perceived by some SEDs as a realistic stressor, simulating performance pressure. However, the competitive aspect of the OSCEs with a reward for high performance may not be necessary to support the educational value of the event.

<4>Future Direction

Program Directors stated that they are planning to implement multi-station OSCEs into their residency program curriculum and that this event provided valuable information for planning, content, and assess-

ment options. Exposing junior residents to this method may facilitate the process. Some programs identified unexpected skill gaps in their residents' skill sets, and each program planned to provide additional education and deliberate practice to address recognized deficiencies.

<3>3. Faculty (Station Mentor) Perception

A high percentage of station mentors (22 out of 24; response rate 92%) from all 4 participating secondary institutions completed the survey. Faculty mentors from the primary institution did not complete the mentor survey since they contributed to the event development. The station mentors agreed with the content of the OSCE event (Table 4). Although the station mentors perceived value in such an event for resident skill assessment and agreed with the utilization of competition as a realistic stressor, the station mentors were split on the impact of the competitive aspect on resident performance. While only 1 responder felt that the competition aspect did not enhance performance, more than 40% of responders were neutral.

DISCUSSION

Through the use of a structured approach, this educational OSCE project was successfully replicated at multiple other institutions, subsequently reaching a larger resident cohort. Each institution was able to conduct the 1-day event and create a valuable learning experience. Participants, faculty, and site event directors indicated a high level of appreciation for the OSCE event. Institutions faced similar obstacles in implementing this educational experience. Faculty time constraints because of clinical demands were reported as the greatest obstacle. Given the complexity of organizing multi-institutional studies and collaborations, this study illustrates 1 example of how to approach implementation of multi-institutional educational projects. We have demonstrated that our educational collaboration was successful in (1) identifying shared educational goals, (2) conducting an intervention with perceived value that fills a shared educational need, (3) sharing previously developed and successfully implemented materials (assessments, rating scales, IRB) with other programs, and (4) obtaining feedback from participants and

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sharing the results with all study sites.

The educational value of this OSCE event has been documented in previous studies.^{4,5} Since the event structure was originally based on the needs of 1 residency program at 1 institution, the replication of this intervention at other institutions affirmed that the educational OSCE-based approach addressed shared needs at other institutions. This multi-institutional collaboration confirmed the findings of the single-institution project. In addition, it highlights the benefits and obstacles associated with the replication of educational projects.

To validate the findings of single institution educational research, experimental educational interventions should be reassessed in different environments to assess their effectiveness for a larger cohort of learners.^{2,8,9} However, since meaningful educational change originates from an educational need, we took several steps to ensure that collaborators embraced the OSCE integration into their curriculum. We included residency programs of diverse sizes and different learners (CA0 and CA1) to test our approach for feasibility and robustness.

An OSCE is often used as a summative assessment method.^{10,11} Participants indicated that they appreciated the feedback they received after the OSCE workstations. Comparison of participants' pre- and post-event skill perception showed that learners gained confidence based on the learning experience or confirmed skill gaps. This might be a reasonable starting point for developing individualized learning opportunities.¹¹ Our findings confirm that the formative assessment approach to an OSCE, including detailed feedback after each encounter, is feasible and appreciated by learners and educators.

OSCE-based assessments during residency training may be helpful for learners by facilitating self-reflection. The high degree of confidence expressed in the pre-event survey may have been related to a lack of insight among junior residents regarding their dependence on the guidance of more experienced anesthesia providers. Without an objective skill assessment, and with min-

imal exposure to significant clinical challenges, junior residents may not appreciate how much growth towards becoming a competent anesthesiologist will be needed over the course of their residency training. The first step of learning for a junior resident (i.e. unconscious incompetent learner), is to realize the need for improvement.⁸ Providing feedback early in the training process may assist this realization.⁹

Participants indicated that they agreed with the learning value and OSCE event format. The survey also confirmed that approximately two-thirds of participants enjoyed the competitive nature of the event, but only 40% believed that the competitive format enhanced their performance. Because of their junior training level, residents may not fully appreciate the importance of being able to perform under pressure. However, the survey result may not accurately reflect the participant perception since the post-event survey response rate was less than the pre-event survey. The event faculty (station mentors, SEDs, and PDs) were supportive of using competition to simulate realistic stress. Overall, the participants of this multi-institutional project perceived the event as helpful for personal skill development, therefore confirming the findings of the previous survey based on the single institution concept⁴.

The described project required significant amount of preparation, planning, and resources. The significant involvement of faculty from the primary institution to facilitate the event at the participating institutions may have eased the process, but it is unclear if this amount of 'on-site' involvement was necessary. Based on the described experience, we feel that the initiation of educational collaborative research may require substantial involvement to assure OSCE station similarity between sites. With knowledge of institutional infrastructure (simulation technology, simulation space, and personnel) and increased amount of collaboration experience, the majority of project facilitation may be achieved without physical presence and with less involvement of the primary institution, therefore making the OSCE event truly transferrable.

In summary, we demonstrated that a competition-based OSCE event, used to assess

junior anesthesiology resident skills, is reproducible at multiple institutions and provides formative feedback to learners in a consistent manner. Replication of the multi-station OSCE format was not only feasible, but survey data demonstrated that programs were easily able to reproduce the event. Future studies on educational event replication are warranted to develop common themes around challenges and factors leading to success.

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References

1. McBryde M, Vandiver JW, Onysko M. Transition of Care in Medical Education: A Compilation of Effective Teaching Methods. *Fam Med* 2016;48(4):265-72.
2. Makel MC, Plucker JA. Facts Are More Important Than Novelty: Replication in the Education Sciences. *Educ Res* 2014;43(6):304-15.
3. Bhatti NI. Assessment of Surgical Skills and Competency. *Otolaryngol Clin N Am* 2017;50:959-65.
4. Rebel A, DiLorenzo AN, Fragneto RY et al. A Competitive Objective Structured Clinical Examination Event to Generate an Objective Assessment of Anesthesiology Resident Skills Development. *A A Case Rep* 2016 May 15;6(10):313-9.
5. Rebel A, DiLorenzo AN, Fragneto RY, et al. Objective Assessment of Anesthesiology Resident Skills Using an Innovative Competition-Based Simulation Approach. *A A Case Rep* 2015 Sep 1;5(5):79-87.
6. Rathmell JP, Lien C, Harman A. Objective structured clinical examination and board certification in anesthesiology. *Anesthesiology* 2014;120(1):4-6.
7. Chilcott J, Tappenden P, Rawdin A, et al. Avoiding and identifying errors in health technology assessment models: qualitative study and methodological review. Using thematic analysis in psychology. *Health Technol Assess* 2010;14(25):1-107.
8. Tobin JM. Developing a trauma curriculum for anesthesiology residents and fellows. *Curr Opin Anesth* 2014;27:240-5.
9. Weinger MB. Experience [not equal to] expertise: can simulation be used to tell the difference? *Anesthesiology* 2007 Nov;107(5):691-4.
10. Boulet JR, Murray DJ. Simulation-based Assessment in Anesthesiology. Requirements for Practical Implementation. *Anesthesiology* 2010;112:1041-52.
11. Hastie MJ, Spellman JL, Pagano PP, et al. Designing and Implementing the Objective Structured Clinical Examination in Anesthesiology. *Anesthesiology* 2014;120:196-203.

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Annette Rebel is a Professor in the Department of Anesthesiology at University of Kentucky in Lexington, KY; Amy DiLorenzo is an Educational Specialist in the Department of Anesthesiology at University of Kentucky in Lexington, KY; Rob Isaak is an Associate Professor in the Department of Anesthesiology at University of North Carolina in Chapel Hill, NC; Stuart McGrane is an Assistant Professor in the Department of Anesthesiology at Vanderbilt University in Nashville, TN; Kenneth R. Moran is an Associate Professor in the Department of Anesthesiology at Ohio State University in Columbus, OH; Edward C. Mobley is an Assistant Professor in the Department of Anesthesiology at University of Tennessee in Knoxville, TN; Demicha D. Rankin is an Assistant Professor in the Department of Anesthesiology at Ohio State University in Columbus, OH; Marjorie Stiegler is an Associate Professor in the Department of Anesthesiology at University of North Carolina in Chapel Hill, NC; Arna Banerjee is an Associate Professor in the Department of Anesthesiology at Vanderbilt University in Nashville, TN; Robert M. Craft is a Professor in the Department of Anesthesiology at University of Tennessee in Knoxville, TN; Randall M. Schell is a Professor in the Department of Anesthesiology at University of Kentucky in Lexington, KY. Corresponding author: Annette Rebel M.D., Professor of Anesthesiology and Surgery, University of Kentucky Medical Center, 800 Rose St., Lexington, KY 40536. Telephone (859) 323-5956, Fax: (859) 323-1080

Email address: Annette Rebel: arebe2@email.uky.edu

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Abstract

Background: Educational research projects are often developed and implemented at a single institution. However, the research project methods and results may not be generalizable and able to be replicated successfully at other institutions. The aim

of this study was to investigate the process of replicating an effective educational Objective Structured Clinical Examination (OSCE) event at multiple other institutions.

Methods: An OSCE event was initially designed and implemented at the primary institution to assess the skill level of junior residents on the performance of basic anesthesia tasks. After the initial implementation, additional institutions were recruited to participate in a replication of this OSCE event at their own institutions. The primary institution provided the OSCE scenarios, assessment tools, rater training, and resident participant instructions. The participating secondary institutions' (n=4) event managers obtained Institutional Review Board [IRB] approval, developed the event schedule, assigned faculty evaluators, and organized the simulation space at their own medical centers. The events were assessed by the secondary institutions' resident and faculty participants via an anonymous survey regarding the event's content and their perception of its educational value.

Results: We replicated a complex educational OSCE event, developed and implemented at 1 institution, at 4 other institutions. Resident participants (n=60), participating faculty (n=24), and event directors (n=4) indicated a high level of appreciation for the OSCE event.

Conclusion: Using a structured approach, educational OSCE events can be successfully replicated at multiple institutions. Organization of multi-institutional studies and collaborative efforts is complex. This study illustrates 1 example of how to successfully approach multi-institutional educational projects.

Key Words: Objective Structured Clinical Examination, formative feedback, milestone assessment, multi-institutional educational research

Figures

Figure 1:

Program Director Interview (*To be audio recorded and transcribed*)

State **name/program** and **position-role of the person** at the beginning of the interview

- 1) Are OSCEs part of your current residency program?
- 2) Was the AO event easily organized in terms for resident availability?
- 3) Were the workstations appropriate for content / training level.
- 4) Do you think the residents were challenged enough?
- 5) Are there any other things you would have desire to evaluate during such an event?
- 6) Do you consider such an event valuable for resident competency assessment / milestone assessment?
- 7) What do you think about the competition aspect of the AO events?
- 8) Do you think the competition has motivated your residents?
- 9) Is the competition aspect causing more stress than desired / is that a realistic stressor to simulate anesthesia related stress?

- 10) Are you planning on using OSCEs in the future?
 - How?
 - Resident Debriefing?
 - Are you planning on continuing similar projects (e.g. OSCE for competency assessment)?
- 11) What are possible limitations to doing this in the future?
- 12) Are you planning to provide any OSCE preparations to your residents for the ABA certification process?
- 13) Do you see any value in AO events for the ABA certification preparation?

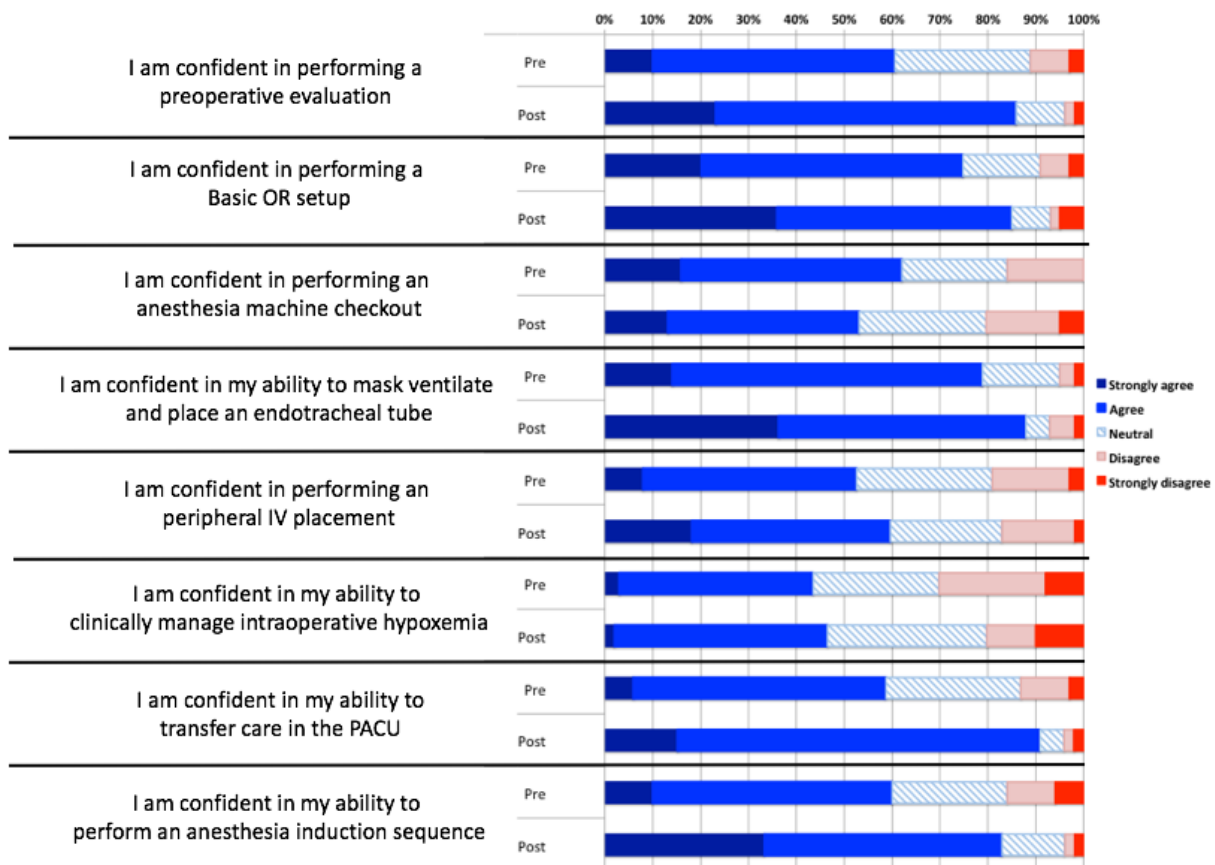
Final thoughts/Conclusions

- 14) What other comments do you have about this event?

Figures continued

Figure 2

Participant's self-assessment of skill level in the pre- and post-event survey



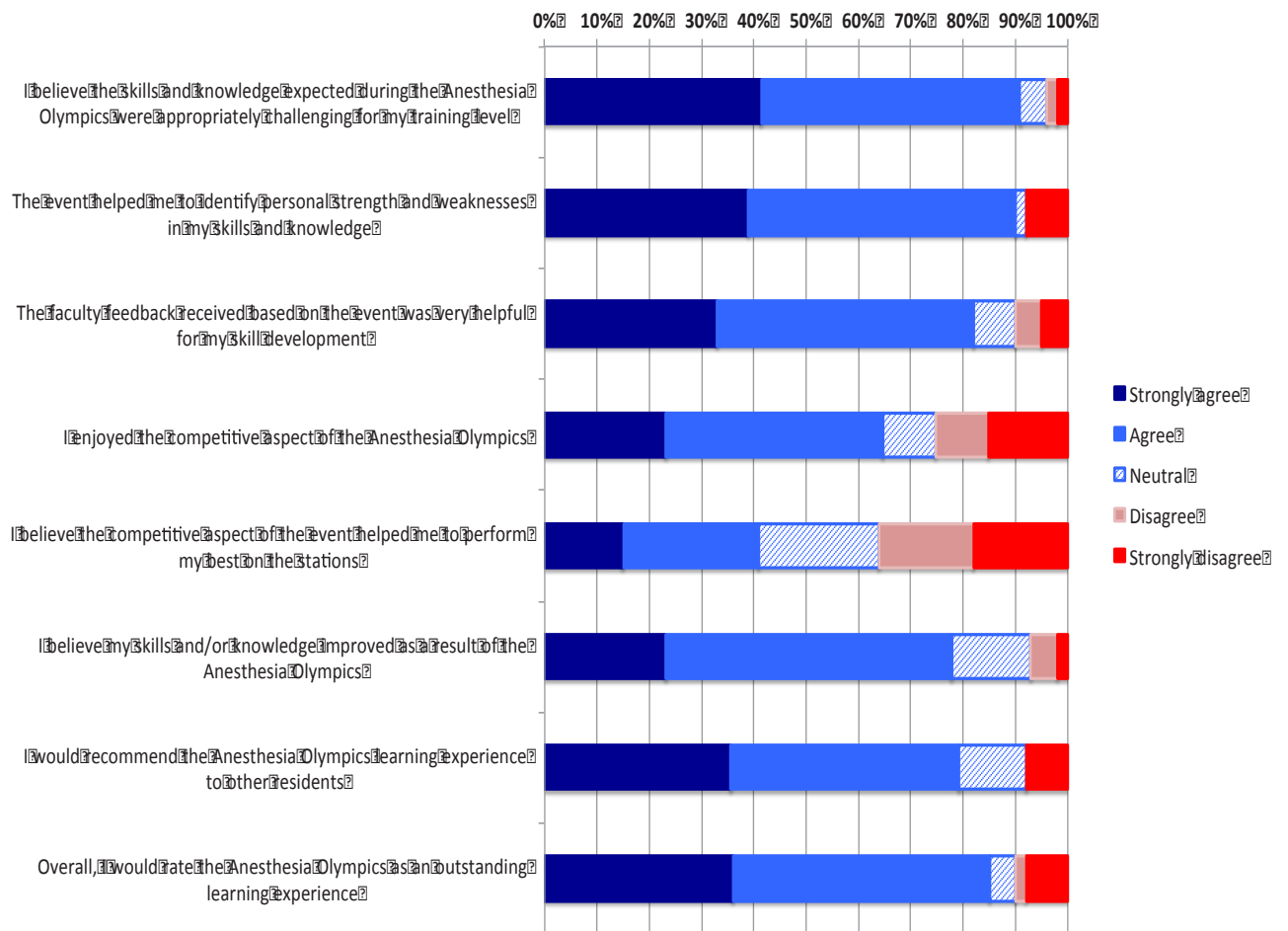
Participant survey of skill level, assessed before and after the event; the response is displayed as % of all survey responders.

Pre-survey response rate N= 50 (out of 60 participants) [83%, range 73-93%]; 19 CA1 residents [79%], 31 CA0 residents [86%];

Post-survey response rate N=39 (out of 60 participants) [65%, range 36-100%];14 CA1 residents [58%], 25 CA0 residents [69%]

Figures continued

Figure 3: Participants perception of event learning value



Post survey response rate N=39 (out of 60 participants) [65%, range 100-6%]; 14 CA1 residents [58%], 25 CA0 residents [69%]

Tables

Table 1. Description of the OSCE Event (Anesthesia Olympics)

Work Station	Objective	Tasks Included	Station Setting	Equipment
1	Preoperative assessment	Perform anesthesia oriented history and physical Generate anesthesia plan Address patient questions	PreOp clinic setting	Standardized person (patient)
2	OR ventilator check	Check OR ventilator for functionality including leak test Availability of positive pressure bag Identify leak source and resolve malfunction	Room with access to pressurized oxygen	OR ventilator
3	PIV and airway management	Place peripheral intravenous access Demonstrate mask ventilation skills Perform direct laryngoscopy and place endotracheal tube	Simulation space	Mannequin for IV placement Mannequin for mask ventilation and intubation
4	General anesthesia induction	Place monitors as required by ASA guidelines Prepare airway equipment (oral airway, laryngoscope, endotracheal tube, check LMA availability) Prepare medications (Fentanyl, Lidocaine, Propofol, neuromuscular blocking agent) Check IV access and preoxygenate Administer sedation and check for loss of consciousness Perform mask ventilation Give neuromuscular blocking agent Place endotracheal tube (after appropriate waiting time)	OR environment	OR monitors OR ventilation Mannequin for airway management with IV access
5	Postoperative report	Transfer anesthesia care after anesthesia emergence to the next provider in the postoperative care unit Patient background information Intraoperative anesthesia events incl. medications/fluids Postoperative plan Possible postoperative complications and recommendations	PACU environment	Mannequin on stretcher Transport monitor Standardized person (RN)
6	Intraoperative crisis	Medical management of intraoperative hypoxemia Communication with attending (call for help) Communication with surgical team Organization and delegation of tasks	Simulation space	High fidelity simulation scenario

The workstation content and outline have been published previously.¹

Tables continued

Table 2

Participating Anesthesiology Residency Programs

Institution		Participants	Training level
University of Kentucky	UK	14	CA0
University of North Carolina	UNC	11	CA0
Ohio State University	OSH	11	CA0
		Sum CA0 36	
Vanderbilt University	VU	16	CA1
University of Tennessee	UTKN	8	CA1
		Sum CA1 24	
		Total n=60	

Tables continued

Table 3: Qualitative Analysis of PD/SED interview: Themes and Sub-Themes

	Theme	N	Sub-Theme
Background	No or minimal prior OSCE exposure	(3)	Some simulation training
Event			
Feasibility	Easy to manage	(3)	Established process, assessment tools, and scenarios
	Planning	(4)	<ul style="list-style-type: none"> • Time to organize; • Plan for extra manpower
Design	Valid	(4)	<ul style="list-style-type: none"> • Well designed, appropriate content • Appropriately challenging for learner
Event Perception			
Educational Value	Milestone Assessment	(4)	Supplementary information, especially for junior residents
	Self-Reflection	(3)	For learner and for program to identify learning gaps
	Repetitiveness	(2)	Reassess after intervention
	Feedback / Debriefing	(2)	<ul style="list-style-type: none"> • Valuable to facilitate learning; • Individualized feedback with learner
Competition Aspect	Encouraging	(2)	<ul style="list-style-type: none"> • Motivation to do well; • Learners appreciated the reward
	No negative impact	(2)	<ul style="list-style-type: none"> • Not needed; • Not competing against each other
	Stress Management	(3)	<ul style="list-style-type: none"> • Modified stressor; • Simulation is stressful; • Realistic stressor
Limitations	Faculty time / Manpower	(4)	Support of peers and department are essential for success
Future approach			
	Growth opportunity	(2)	Identifying training gaps
	ABA Certification Preparation	(4)	<ul style="list-style-type: none"> • No firm plans yet; • Expose residents early; • Event helped with planning

Tables continued

Table 4: Post event survey of OSCE Station Mentor

	Agree		Disagree		
Did the workstation content reflect a realistic clinical situation?	22 (100%)		0 (0%)		
Did your workstation provide appropriate content for the training level of the resident?	22 (100%)		0 (0%)		
Did you feel you were able to provide constructive feedback to each resident?	19 (86%)		3 (14%)		
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you consider an event like the Anesthesia Olympics to be valuable for resident assessment/Milestones assessment?	15 (68%)	6 (27%)	1 (5%)	0 (0%)	0 (0%)
Do you believe the competitive aspect of the Anesthesia Olympics enhanced resident performance on your workstation?	5 (23%)	7 (32%)	9 (41%)	1 (4%)	0 (0%)
Do you believe the competitive aspect of the Anesthesia Olympics event was helpful in simulating anesthesia related stress for the residents?	7 (32%)	10 (46%)	3 (13%)	2 (9%)	0 (0%)

22 station mentors (out of 24) from all four secondary institutions completed the post-event survey (response rate 92%).